# FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

**April 8 to April 14, 2012 (Week 15)**

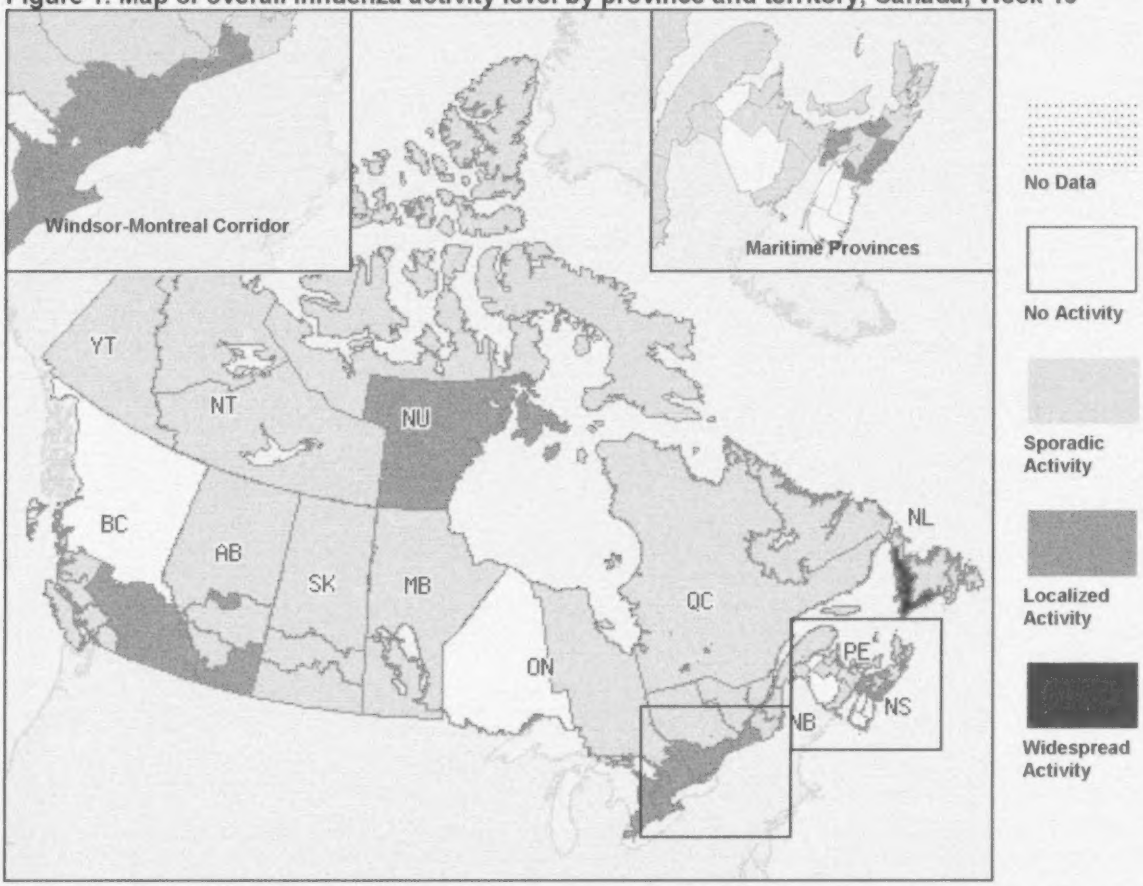
## Overall Influenza Summary

- The peak of activity for the 2011-2012 influenza season in Canada has passed as most indicators of influenza activity continue to decline. However, activity remains elevated in some regions of the country (i.e. Atlantic Region, Ontario, Alberta & British Columbia).
- Forty-four outbreaks of influenza or ILI were reported this week (25 in LTCFs, 4 in hospitals and 15 others).
- In week 15, 841 laboratory detections of influenza were reported (13.9% - A(H3); 6.2% - A(H1N1)pdm09; 16.5% - unsubtyped and 63.4% influenza B). To date this season, influenza B remains the predominant virus type circulating in provinces east of Saskatchewan.
- 118 influenza-associated hospitalizations were reported this week (24 paediatric through IMPACT surveillance and 94 adult through aggregate surveillance)
- The ILI consultation rate declined slightly compared to the previous week but remains within expected levels.

## Influenza Activity (geographic spread) and Outbreaks

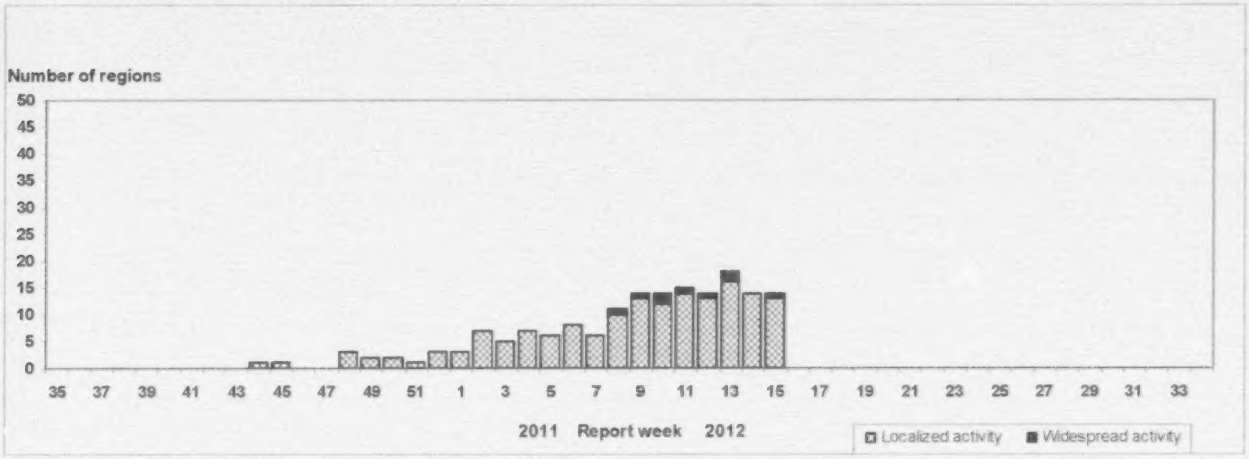
In week 15, 1 surveillance region (within NL) reported widespread activity, 13 surveillance regions (within BC, AB, ON, QB, NS & NU) reported localized activity and 35 regions (within all provinces and territories) reported sporadic influenza activity (see Figure 1). Forty-four outbreaks of influenza or ILI were reported this week: 25 in long-term care facilities (23 in ON & 2 in NS), 4 in hospitals (in BC, ON, QC & NS) and 15 others (4 in AB, 6 in ON, 3 in NS & 2 in NL) (Figure 3).

**Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 15**



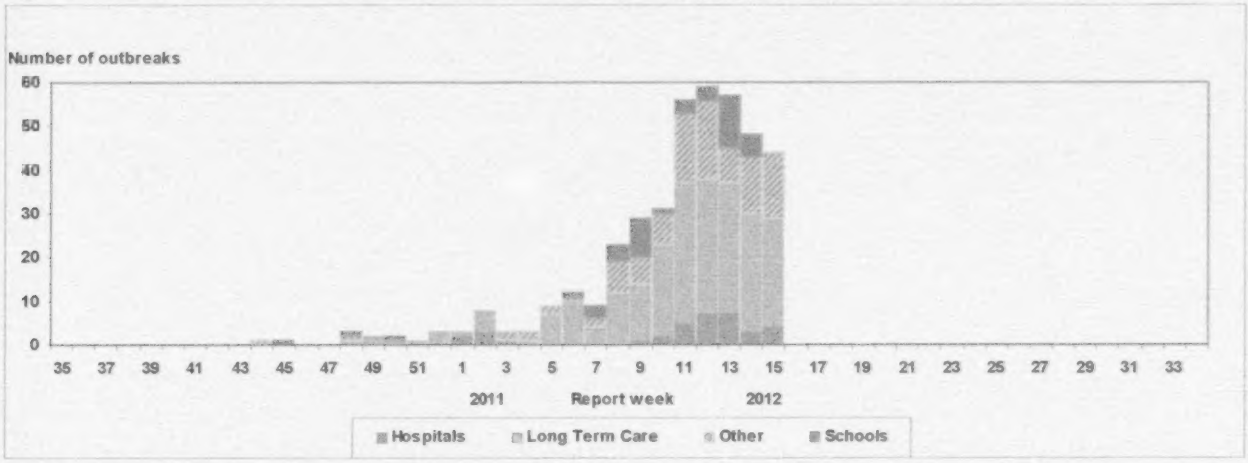

Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

**Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)**




† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

**Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012**




## Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests declined slightly this week and was 18.9% (841/4,440) (Figure 4 & 5). The proportion of positive detections for influenza B (12.0%) slightly increased from the previous week while the proportion positive for influenza A (6.9%) continued to decline. To date this season, influenza B remains the predominant virus type circulating in provinces east of Saskatchewan.

Cumulative to date of influenza virus detections by type/subtype is as follows: 49.4% influenza A (40.9% - A(H3); 18.8% - A(H1N1)pdm09; 40.4% - unsubtyped) and 50.6% influenza B (Table 1).

Detailed information on age and type/subtype were received on 8,022 cases to date this season (Table 2). The proportions of cases by age group are as follows: 21.4% were < 5 years; 18.3% were between 5-19 years; 22.8% were between 20-44 years; 15.2% were between 45-64 years of age; 22.0% were >= 65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (27%) and those >=65 years of age (23%). The largest proportion of influenza B cases were under 20 years of age (48%).

In week 15, the percentage positive for other respiratory viruses declined compared to the previous week except for human metapneumovirus which increased slightly (RSV-7.0%; parainfluenza-1.1%; adenovirus-1.9%; hMPV-3.9%; rhinovirus-6.9 %; and coronavirus-3.0%) (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada Report.

**Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012**

| Reporting provinces | April 8 to April 14, 2012 | | | | | | Cumulative (August 28, 2011 to April 14, 2012) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | | B | Influenza A | | | | | B |
| | A Total | A(H1) | A(H3) | Pand H1N1 | A (UnS)* | Total | A Total | A(H1) | A(H3) | Pand H1N1 | A (UnS)* | Total |
| BC | 25 | 0 | 12 | 13 | 0 | 7 | 504 | 0 | 411 | 81 | 12 | 85 |
| AB | 83 | 0 | 64 | 10 | 9 | 25 | 1094 | 0 | 876 | 170 | 48 | 138 |
| SK | 24 | 0 | 11 | 4 | 9 | 9 | 463 | 0 | 303 | 45 | 115 | 53 |
| MB | 10 | 0 | 0 | 2 | 8 | 19 | 64 | 0 | 8 | 3 | 53 | 185 |
| ON | 55 | 0 | 22 | 19 | 14 | 172 | 845 | 0 | 211 | 460 | 174 | 2199 |
| QC | 98 | 0 | 3 | 4 | 91 | 203 | 1582 | 0 | 49 | 92 | 1441 | 1638 |
| NB | 1 | 0 | 0 | 0 | 1 | 71 | 56 | 0 | 17 | 21 | 18 | 183 |
| NS | 5 | 0 | 5 | 0 | 0 | 8 | 11 | 0 | 7 | 1 | 3 | 84 |
| PE | 0 | 0 | 0 | 0 | 0 | 11 | 3 | 0 | 2 | 1 | 0 | 31 |
| NL | 7 | 0 | 0 | 0 | 7 | 8 | 59 | 0 | 30 | 4 | 25 | 195 |
| Canada | 308 | 0 | 117 | 52 | 139 | 533 | 4681 | 0 | 1914 | 878 | 1889 | 4791 |

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

**Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012***

| Age groups | Weekly (April 8 to April 14, 2012) | | | | | Cumulative (Aug. 28, 2011 to April 14, 2012) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A | | | | B |
| | A Total | Pandemic H1N1 | A/H3N2 | A unsubtyped | Total | A Total | Pandemic H1N1 | A/H3N2 | A unsubtyped | Total |
| <5 | 41 | 3 | 16 | 22 | 46 | 847 | 181 | 303 | 363 | 871 |
| 5-19 | 19 | 1 | 5 | 13 | 51 | 496 | 73 | 250 | 173 | 969 |
| 20-44 | 37 | 7 | 11 | 19 | 45 | 1125 | 237 | 412 | 476 | 706 |
| 45-64 | 31 | 3 | 11 | 17 | 39 | 752 | 152 | 256 | 344 | 471 |
| 65+ | 56 | 1 | 27 | 28 | 62 | 985 | 62 | 609 | 314 | 782 |
| Unknown | 4 | 0 | 4 | 0 | 0 | 17 | 6 | 11 | 0 | 1 |
| Total | 188 | 15 | 74 | 99 | 243 | 4222 | 711 | 1841 | 1670 | 3800 |

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

**Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012**

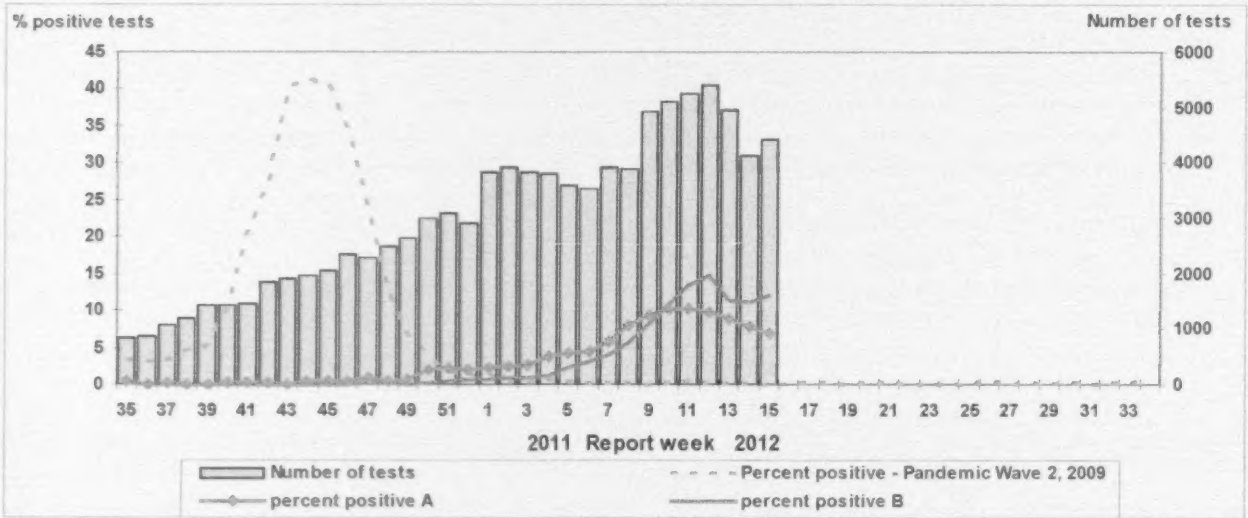
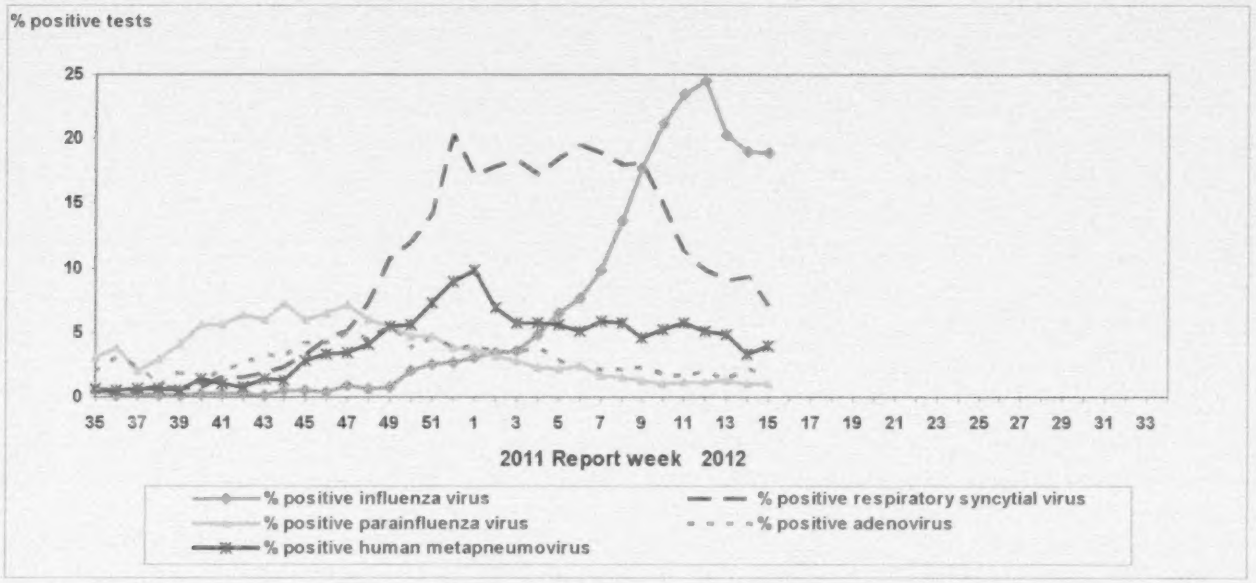


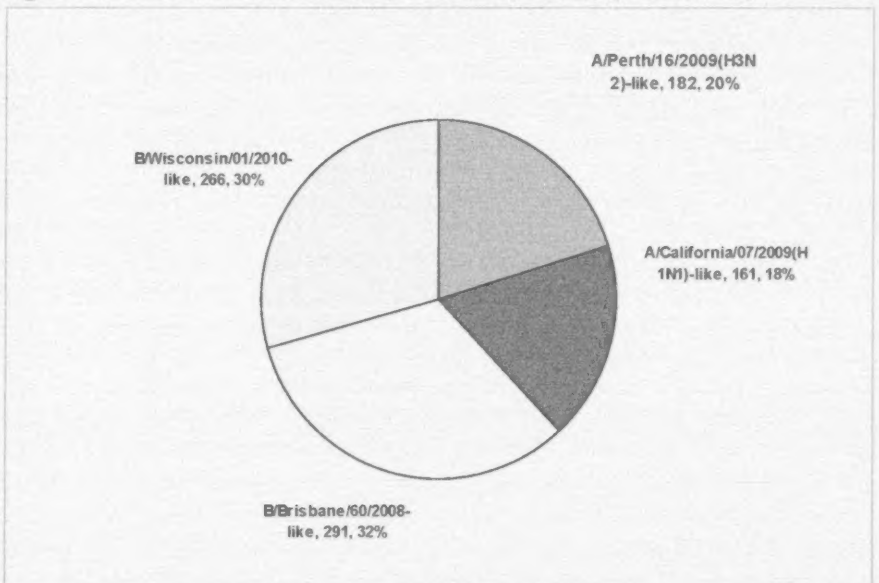
**Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012**


% positive tests
25
20
15
10
5
0
35 37 39 41 43 45 47 49 51 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2011 Report week 2012
% positive influenza virus
% positive parainfluenza virus
% positive human metapneumovirus
% positive respiratory syncytial virus
% positive adenovirus

## Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 900 influenza viruses (182 A/H3N2, 161 A/H1N1 and 557 B). Of the 182 A/H3N2 viruses (from BC, AB, SK, MB, ON, QC, NS & NT), 163 (89.6%) were antigenically similar to A/Perth/16/2009 while 19 (10.4%) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 161 A/H1N1 viruses characterized (from BC, AB, SK, MB, ON, QC & NB), 160 (99.4%) were antigenically similar to A/California/07/2009 and 1 (0.6%) virus tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 557 influenza B viruses characterized, 291 (52.2%) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 291 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 266 (47.8%) influenza B viruses (from BC, AB, MB, ON, QC, NB, NS & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

**Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 900**




Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

## Antiviral Resistance

Since the beginning of the season, NML has tested 866 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and 865 for zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 511 influenza A viruses (283 H3N2 and 228 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

**Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012**

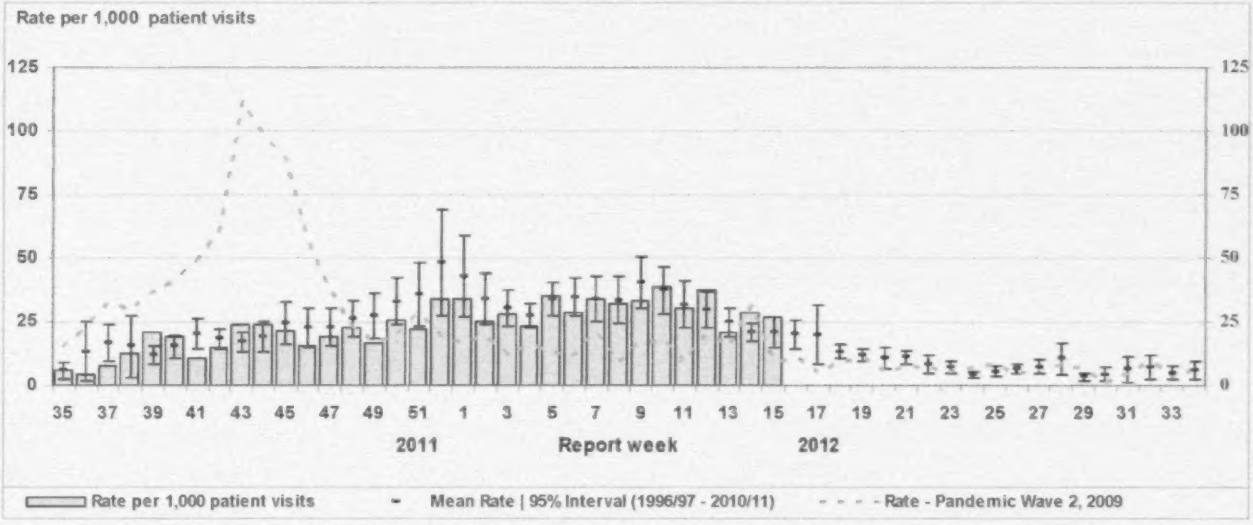
| Virus type and subtype | Oseltamivir | | Zanamivir | | Amantadine | |
|---|---|---|---|---|---|---|
| | # tested | # resistant (%) | # tested | # resistant (%) | # tested | # resistant (%) |
| A (H3N2) | 176 | 0 | 176 | 0 | 283 | 282 (99.6%) |
| A (H1N1) | 175 | 0 | 174 | 0 | 228 | 228 (100%) |
| B | 515 | 0 | 515 | 0 | NA* | NA* |
| TOTAL | 866 | 0 | 865 | 0 | 511 | 510 (99.8%) |

* NA – not applicable

## Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate declined from the previous week (26.7 ILI consultations per 1,000 patient visits in week 15) but remains within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed in those between 5 to 19 years old (58.7/1,000 visits) and children under 5 (54.5/1,000 visits).

**Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)**




Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

## Severe Respiratory Illness Surveillance

### Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 15, 24 new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Four hospitalizations were due to influenza A (unsubtyped) (in BC, MB & QC); 4 were due to A(H3N2) (in AB) and 16 were due to influenza B (in AB, MB, ON, QC & NS). In addition, 1 paediatric death was reported (MB) that occurred in week 12 and was associated with influenza B infection.

To date this season, 476 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 213 (44.7%) were due to influenza A and 263 (55.3%) were due to influenza B. The proportion of cases by age group is as follows: 14.9% among infants <6 months of age; 20.8% among children 6-23 months of age; 31.1% were between 2-4 years; 22.5% were between 5-9 years; and 10.7% were between 10-16 years. To date this season, 4 influenza B associated deaths have been reported through the IMPACT network.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

**Influenza Hospitalizations and Deaths (Aggregate Surveillance System)**
In week 15, 142 new laboratory-confirmed influenza-associated hospitalizations were reported of which 48 (33.8%) were in those < 20 years of age and 94 (66.2%) in those ≥ 20 years of age; 31.0% due to influenza A and 69.0% due to influenza B. The hospitalizations were reported in AB (15), MB (10), ON (102), NS (5), PE (6) and NL (4). Of the 142 hospitalizations, 4 required admission to ICU (2 in AB, 1 in MB and 1 in NL) and were all associated with influenza A infection. In addition, there were 9 adult influenza-associated deaths reported (in ON); 6 of the deaths were associated with influenza B infection.

To date this season, 1,219 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT). The proportion of cases by age group were similar to the previous week and are as follows: 9.1% in those < 1 year of age; 17.2% in those 1-4 years of age; 15.3% in those 5-19 years of age; 11.5% in those 20-44 years of age; 16.2% in those 45-64 years of age; 30.6% in those ≥ 65 years and 0.1% was unknown. The proportion of cases by influenza type and subtype were similar to the previous week and are as follows: 14.1% were A(H1N1)pmd09; 19.9% were A(H3N2); 12.3% were influenza A unsubtyped; 53.6% were influenza B and 0.2% had influenza A and B co-infection..

To date there have been 47 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 25.5% were < 20 years of age and 74.5% were ≥ 20 years of age. In addition, 68 influenza-associated deaths have been reported to date this season (from AB, SK, MB, ON & NS) of which 7.4% were among those < 20 years of age and 92.6% in those ≥ 20 years of age. Of the adult deaths, 76.2% were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

## International Influenza Updates

**WHO:** In the April 13, 2012 influenza update, the WHO reported that influenza activity appears to have peaked and is declining in most areas of the northern hemisphere temperate regions (i.e. North America, Europe and northern Asia). The most commonly detected virus type or subtype throughout Europe and North America (except Mexico) has been influenza A(H3N2), although the proportion of influenza B detections has been increasing toward the end of the season in North America. Increasing genetic and antigenic diversity has been noted in H3N2 viruses in the later part of the influenza season. *World Health Organization influenza update*

**United States:** During week 14, influenza activity was elevated in some areas of the United States, but declined nationally and in most regions. In week 14, 21.0% (756/3,607) of influenza tests were positive of which 80.3% were for influenza A viruses and 19.7% for influenza B. Since October 1, 2011, the CDC characterized 1,084 influenza viruses: 240 A/H1N1, 692 A/H3N2 and 152 B. Of the 240 A/H1N1 viruses characterized, 238 (99.2%) were A/California/7/2009(H1N1)-like and 2 (0.8%) showed reduced titers with antiserum produced against A/California/7/2009. Of the 692 influenza A/H3N2 viruses that were characterized, 557 (80.5%) were A/Perth/16/2009-like and 135 (19.5%) showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 152 influenza B viruses that were characterized, 64 (42.1%) were B/Brisbane/60/2008-like (B/Victoria lineage) and 88 (57.9%) belonged to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 1.5%, which is below the national baseline. Widespread influenza activity was reported in 10 states, 9 states reported regional influenza activity, 20 states reported localized influenza activity, while the rest reported either sporadic or no activity. To date this season, 13 influenza associated-pediatric deaths have been reported.
*Centers for Disease Control and Prevention seasonal influenza report*

***Novel Influenza A Virus:*** One human infection with a novel influenza A virus was detected in a child in Utah. The child was infected with an influenza A (H3N2) variant virus similar to those identified in the 12 human infections that occurred between July and November 2011. The child has recovered. Contact with swine in the week preceding onset of the child's illness was reported. State public health and agriculture officials are investigating case contacts and sources of exposure; no additional confirmed cases have been detected at this time. *Centers for Disease Control and Prevention seasonal influenza report*

**Europe:** In week 15, influenza activity was low and continued to decrease in most countries in the WHO European Region. Influenza A(H3N2) viruses continue to dominate. Of the 482 ILI/ARI samples tested in week 15, 132 (27.4%) tested positive for influenza, of which 63.6% were for influenza A and 36.4% for influenza B. Since week 40, 1,690 influenza viruses have been characterized antigenically: 25 were A/California/7/2009(H1N1)-like; 1,369 were A/Perth/16/2009(H1N1)-like; 1 was for A/Brisbane/10/2007 (H3N2)-like; 44 were B/Florida/4/2006-like (B/Yamagata/16/88 lineage), 38 were B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 213 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage). *EuroFlu weekly electronic bulletin*

## Human Avian Influenza Updates

No new cases of human A/H5N1 avian influenza infection have been reported by the WHO since April 12, 2012. *WHO Avian influenza situation updates*

**FluWatch reports include data and information from the following sources:** laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

**ILI definition for the 2011-2012 season**

**ILI in the general population:** Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

**Definitions of ILI/Influenza outbreaks for the 2011-2012 season**

**Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

**Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

**Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

**Influenza Activity Levels Definition for the 2011-2012 season**

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

*We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.*

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.